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(71) Applicant (for all designated States except US): **PRESIDENT AND FELLOWS OF HARVARD COLLEGE** [US/US]; 17 Quincy Street, Cambridge, MA 02138 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LIEBER, Charles, M.** [US/US]; 27 Hayes Avenue, Lexington, MA 02173 (US). **WU, Yue** [CN/US]; 27 Lee Street, #3, Cambridge, MA 02139 (US). **XIANG, Jie** [CN/US]; 88 Beacon Street, Apt. 16, Somerville, MA 02143 (US). **YANG, Chen** [CN/US]; 20 Peabody Terrace, Apt. 32, Cambridge, MA 02138 (US). **LU, Wei** [CN/US]; 35 Concord Avenue, #1, Cambridge, MA 02138 (US).

(74) Agent: **OYER, Timothy, J.**; Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210 (US).

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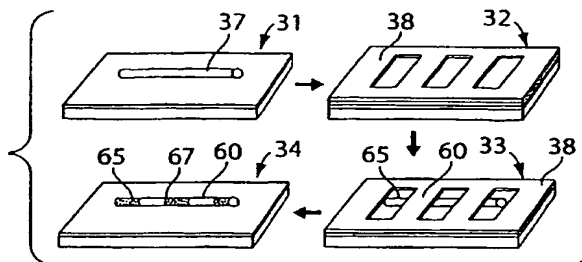
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(54) Title: **NANOSTRUCTURES CONTAINING METAL-SEMICONDUCTOR COMPOUNDS**



(57) **Abstract:** The present invention generally relates to devices and components for use in nanotechnology and sub-microelectronic circuitry that include metal-semiconductor compounds such as metal silicides. The present invention also, in some embodiments, provides methods of forming such devices and components by allowing a first material to diffuse into a second material, optionally creating a new compound. Thus, as an example, metal atoms are allowed to diffuse into a semiconductor to create the metal-semiconductor compound. In some cases, the device may include a component that is a single crystal. Certain metal-semiconductor compounds of the invention have novel physical/electrical properties, for example, low resistivities, high conductivities, high current density capacities, and the like. In some embodiments, a component of the invention may have two or more regions that differ in composition, where one or both of the regions can include a metal-semiconductor compound. In some cases, the regions may be created by using a mask or a nanoscale wire to define the two or more regions.

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